APPENDIX 42

MARYLAND ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES, INC.

VIRGINIA ASSOCIATION OF MUNICIPAL WASTEWATER AGENCIES, INC.

MEMORANDUM

TO: CBP Water Quality Steering Committee Representatives
   CBP Nutrient Subcommittee Representatives
   CBP Reevaluation Technical Workgroup Representatives

FROM: V/MAMWA CBP Team

CC: MAMWA Board of Directors
   VAMWA Board of Directors

DATE: January 21, 2009

RE: BMP Efficiencies

Summary

This memorandum provides the recommendations of the Virginia and Maryland Associations of Municipal Wastewater Agencies ("V/MAMWA") on the appropriate treatment of BMP efficiencies for nutrients and sediment in the development of the Bay-wide TMDL. Recent model runs have predicted that attainment of Bay water quality standards will be much more difficult than indicated by previous models, posing serious questions of attainability. Reduced BMP efficiencies of the new model are one of the reasons for this discrepancy. Although V/MAMWA concur that model calibration scenarios should use "historical average" BMP efficiencies, we recommend that the Bay Program develop an alternate set of BMP efficiencies for implementation scenarios, reflecting improved BMP installation, operation, and maintenance. Such an approach would address the well-known need for such improvements, and also help address attainability concerns associated with the present TMDL process.

Background

Reduced BMP efficiencies are one of the reasons that the Phase 5 WSM predicts that attainment of water quality standards will be more difficult that predicted by previous model versions. In many cases, the modeled BMP efficiencies were reduced to be more conservative or realistic, reflecting the fact that many BMPs have historically not achieved intended design or research efficiencies. As stated in the Year 1 BMP Report entitled *Process for Developing BMP Definitions and Effectiveness Estimates*:

> Effectiveness recommendations should reflect operational conditions, defined as the average watershed wide condition...

The Year 1 BMPs (and presumably, the forthcoming Year 2 BMP report) cite numerous examples where modeled BMP efficiencies were made more conservative to reflect, in part, variability associated with BMP installation, operation, and maintenance. For example, the report on riparian buffers states the following:

Based on discussions with researchers and literature reviews, a 20% reduction in the effectiveness values is applied to efficiencies from literature sources to account for spatial, temporal and management variability...

Similarly, the Year 1 report on urban wet ponds and wetlands states:

The uncertainty in how improper maintenance will adjust BMP efficiencies supports the recommendation to use a more conservative percent removal estimate.

For some practices, the variability in efficiency is a function of controllable variables, such as tillage practice and planting date associated of cover crops. In other cases, BMP efficiencies were kept lower than literature values simply to be more conservative or for other programmatic reasons. For example, the Year 1 report on dry detention basins states:

The CBP approved effectiveness estimates for Dry Detention Ponds/Basins and Hydrodynamic Structures were not changed based on the recommendation of the USWG. However, the function and actual effectiveness of these structures needs further evaluation since available literature does suggest somewhat higher removal rates...

In summary, many of BMP efficiencies in the Phase 5 WSM were either lowered or kept low to reflect both uncontrollable and controllable variability, including how the practices are installed, operated, or maintained. Although the model assumptions are intended to be realistic (to achieve the best model calibration) rather than explicitly conservative, it appears that at least some of BMP efficiency values have intentionally been set to conservatively low values.

Model Calibration v. TMDL/Tributary Strategy BMP Efficiencies

It is reasonable that model calibration scenarios should assume historical "average" management conditions. Any other approach—including the use of conservatively low values— would make the model less accurate and thus adversely impact model calibration. However, it is not necessary for forward-looking management scenarios to retain the assumption of historically-average BMP management. Rather, improvements in the way BMPs are installed, operated, and maintained are a viable implementation component. To state the concept another way, TMDL implementation recommendations should be based on the manner in which BMPs *should* be managed, not necessarily how they have historically been managed. This will allow the Bay tributary strategies to explicitly consider the well-documented need for improvements in BMP installation, operation, and maintenance.

One example of where the Bay Program and States have not assumed less than acceptable nutrient removal performance is for wastewater treatment plants. The performance expected and

used in the model is based on properly installed, operated and maintained facilities. The standard for performance relative to design of any nutrient removal strategy (wastewater plants, BMPs, filter feeders, etc.) used in the Bay model should not be different.

Recommendations

Based on the discussion above, VAMWA and MAMWA make two related recommendations to the Chesapeake Bay Program:

1. All BMP efficiencies should be reviewed to ensure that the selected values used for model calibration are representative of *average* management conditions, not *conservatively low* estimates of management condition.

2. All BMP efficiencies used in future management/TMDL scenarios should be reviewed to ensure that the selected values used for model calibration are representative of BMPs that are installed, operated and maintained properly.

If you have any questions or would like to discuss these recommendations with V/MAMWA representatives, please contact Chris Pomeroy at (804) 716-9021 or chris@aqualaw.com.

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